REMARKS

I. Introduction

In response to the Office Action dated July 2, 2007, no claims have been cancelled, amended or added. Claims 1-26 remain in the application. Re-examination and re-consideration of the application is requested.

II. Prior Art Rejections

A. The Office Action Rejections

On pages (2)-(6) of the Office Action, claims 1-13, 15-22, 25 and 26 were rejected under 35 U.S.C. §103(a) as being obvious in view of the combination of U.S. Patent 6,502,131 (Vaid), U.S. Patent 6,687,224 (Ater) and U.S. Patent 6,829,634 (Holt). On pages (7)-(8) of the Office Action, claims 14, 23 and 24 were rejected under 35 U.S.C. §103(a) as being obvious in view of the combination of Vaid, Ater, Holt and U.S. Patent 5,784,527 (Ort).

Applicant's attorney respectfully traverses these rejections.

B. The Vaid Reference

Vaid describes a method and system for monitoring or profiling quality of service within one or more information sources in a network of computers. The method includes a step of providing a network of computers, each being coupled to each other to form a local area network. The network of computers has a firewall server coupled to the network of computers and a distributed traffic management tool coupled to the firewall server. The method also includes implementing traffic monitoring or profiling of incoming and outgoing information from one of the information sources.

C. The Ater Reference

Ater describes a bandwidth sharing method for use on respective interstitial connections between on one side a plurality of users and on the other side a common data-link having a shared packet switching device, the method including performing the steps of: monitoring data-link directed bandwidth from each user; maintaining a current sum of the monitored bandwidth; and whenever the current sum exceeds a predetermined data-link bandwidth threshold, reducing current collective data-link directed bandwidth by for substantially each user, comparing the respective user's data-link directed bandwidth with a predetermined data-link bandwidth threshold for the respective user; using an allocation function, selecting at least one user who is exceeding his

predetermined data-link bandwidth threshold, and for a predetermined time interval, cutting the connection between each selected at least one user and the shared switching device, so as to restore a current sum of the monitored bandwidth to be not greater than the predetermined data-link bandwidth threshold.

D. The Holt Reference

Holt describes a technique for broadcasting data across a network. An originating participant sends data to another participant, which in turn sends the data that it receives from a neighbor participant to its other neighbor participants. Communication in the broadcast network is controlled by a contact module that locates the neighbor participants to which the seeking participant can be connected and by a join module that establishes the connection between the neighbor participants and the seeking participant. Data is numbered sequentially so that data that is received out of order can be queued and rearranged.

E. The Ort Reference

Ort describes a system and method for handling errors encountered in an audio/video data stream during playback. In one application, the audio/video data stream originates from an MPEG (e.g., Motion Pictures Expert Group) source and is a playback file of the MPEG format. Upon receiving an error interrupt originating from a hardware video processor unit, the novel system executes a group of predetermined error handling processes. A playback error can result from bad data within the playback file's data stream, the data bus, or other transmission error. One error recovery process used by the novel system causes the playback system to skip B and P frames until an I frame is reached which is processed normally and playback resumes. Another error recovery process causes the playback system to seek forward a predetermined number of seconds and/or frames to resume normal playback in order to avoid a bad media sector. A third error recovery process causes the playback system to seek forward to a next sequence header to resume normal playback. The processes are performed in a novel error sequence in which repeat errors are handled by different processes. Back-to-back errors occurring outside a predetermined time or data window are not considered repeat errors and reinitialize the error sequence. If the error sequence fails to avoid the error, the user or viewer is informed that the playback file may be non-MPEG compliant and playback is temporarily terminated.

F. <u>Applicant's claims are patentable over Vaid, Ater and Holt.</u>

Applicant's invention, as recited in independent claims 1, 16, 25 and 26, is patentable over the references, because the claims recite limitations not found in the references.

Nonetheless, the Office Action asserts the following:

> Claims 1-13, 15-22, 25, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,502,131 issued to Vaid et al. (Vaid) in view of US Patent 6,687,224 issued to Ater et al. (Ater) in further view of US Patent 6,829,634 issued to Holt et al. (Holt).
>
> As per claim 1, 16, 25, 26, Vaid teaches the method comprising (Abstract): client monitors its own bandwidth (col. 3, lines 8-24, Figs. 9-11); each client informing a succeeding client in the chain of that bandwidth (Figs. 9-11).
>
> Vaid however does not explicitly teach reordering its position among the clients in the chain, comparing bandwidth between two users and a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain.
>
> Ater teaches a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain and further teaches that in the peer to peer sharing, the a peer monitors the bandwidth of another peer (Figs. 1-12, Abstract, col. 4, lines 10-67).
>
> Therefore it would have been obvious to one ordinary skill in the art at the time of the invention to modify the teachings of Vaid to instead monitor and compare the bandwidth of the user in a peer to peer architecture as taught by Ater in order to control the bandwidth of users in a peer to peer network (Ater, col. 4, lines 50-67).
>
> One ordinary skill in the art would have been motivated to combine the teachings of Vaid and Ater in order to provide a system to control the bandwidth of users in a peer to peer network (Ater, col. 4, lines 50-67).
>
> Vaid in view of Ater however does not explicitly teach reordering position among the clients in a chain.
>
> Holt teaches reordering position among the clients in a chain (Figs. 4A-6B).
>
> Therefore it would have been obvious to one ordinary skill in the art at the time of the invention to modify the teachings of Vaid in view of Ater to reorder position among clients in the chain at as taught by Holt in order to have a reliable communication network that is suitable for the simultaneous sharing of information among a large number of processes (Holt, col. 2, lines 40-45).
>
> One ordinary skill in the art at the time of the invention would have been motivated to combine the teachings of Vaid, Ater, and Holt in order to provide a reliable communication network that is suitable for the simultaneous sharing of information among a large number of processes (Holt, col. 2, lines 40-45).

Applicant's attorney disagrees with the above analysis.

The combination of Vaid, Ater and Holt does not teach or suggest each client monitoring its own bandwidth, each client informing a succeeding client in the chain of that bandwidth, each client

comparing its own bandwidth with the bandwidth of a preceding client in the chain, and each client, in response to a difference between the compared bandwidths, reordering its position among the clients in the chain.

a. *Vaid does not teach or suggest "a client monitors its own bandwidth" and "each client informs a succeeding client in the chain of that bandwidth" in the context where each client, in response to a difference between the compared bandwidths, reorders its position among the clients in the chain.*

The Office Action asserts that Vaid teaches that a client monitors its own bandwidth and informs a succeeding client in the chain of that bandwidth. The cited portions of Vaid are set forth below:

> Vaid: col. 3, lines 8-24
>
> In an alternative specific embodiment, the present invention provides a novel computer network system having a real-time bandwidth profiling tool. The real-time bandwidth profiling tool has a graphical user interface on a monitor or display. The graphical user interface includes at least a first portion and a second portion. The first portion displays a graphical chart representing the flow of information from at least one information source. The second portion displays text information describing the flow of information. The combination of the first portion and the second portion describes the information being profiled. Additionally, the graphical user interface has a portion that outputs a graphical representation including text or illustration of the source itself. The flow of information can be from a variety of sources, such as those described above as well as others, to provide a distributed profiling tool.

Vaid: Figs. 9-11

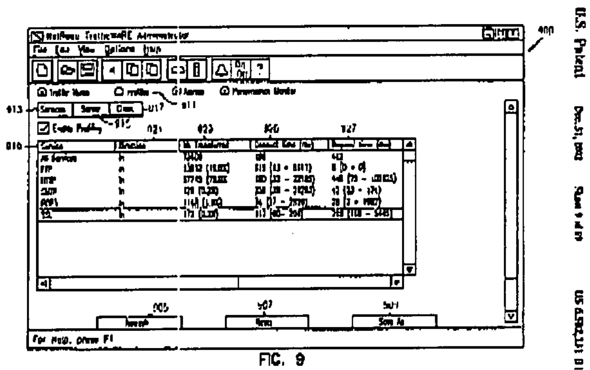


FIG. 9

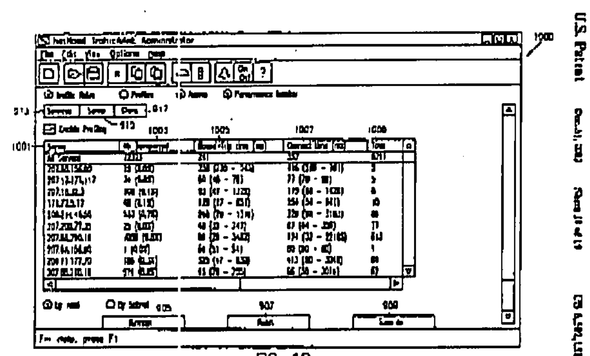


FIG. 10

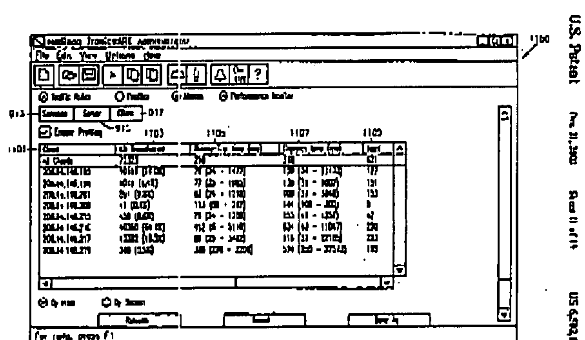


FIG. 11

The Office Action misinterprets Vaid when it asserts that it teaches that a client monitors its own bandwidth and informs a succeeding client in the chain of that bandwidth, because it does not

perform such functions in the context where each client, in response to a difference between the compared bandwidths, reorders its position among the clients in the chain.

Consider, for example, the following portions of Vaid:

> Vaid: col. 2, lines 12-22
>
> Quality of Service is often measured by responsiveness, including the amount of time spent waiting for images, texts, and other data to be transferred, and by throughput of data across the Internet, and the like. Other aspects may be application specific, for example, jitter, quality of playback, quality of data transferred across the Internet, and the like. Three main sources of data latency include: the lack of bandwidth at the user (or receiving) end, the general congestion of Internet, and the lack of bandwidth at the source (or sending) end.
>
> Vaid: col. 2, lines 56-67 (actually, col. 2, line 56 – col. 3, line 7)
>
> In a specific embodiment, the present invention provides a system with a novel graphical user interface for monitoring a flow of information coupled to a network of computers. The flow of information can come from a variety of location or nodes such as a firewall, a server, a wide area network, a local area network, a client, and other information sources. The user interface is provided on a display. The display has at least a first portion and a second portion, where the first portion displays a graphical chart representing the flow of information, which comes from one of many locations on the network. The second portion displays text information describing aspects of the flow of information. The combination of the first portion and the second portion describes the information being profiled. The display also has prompts in graphical or text form or outputs the source of the flow of information, where the source can be one of a plurality of nodes such as a server, a firewall, a wide area network, a local area network, a client, and other information sources. The present invention can be distributed over a network by way of one or more agents.

The above portions of Vaid merely describe a real-time bandwidth profiling tool for a computer. The real-time bandwidth profiling tool of Vaid has a graphical user interface for monitoring the flow of information coupled to a network of computers. However, nothing in Vaid suggests that this information is shared with other devices (or that 'succeeding clients' even exist), or that the information is used in the context of reordering the position of clients in a chain.

b. *Ater does not teach or suggest "a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain and further teaches that in the peer to peer sharing, the peer monitors the bandwidth of another peer."*

The Office Action admits that Vaid does not teach reordering its position among clients in the chain, comparing bandwidth between two users and a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain.

However, the Office Action asserts that Ater teaches a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain and further teaches that in the peer to peer sharing, the peer monitors the bandwidth of another peer.

The cited portions of Vaid are set forth below:

> Ater: Abstract
>
> A bandwidth sharing method for use on respective interstitial connections between on one side a plurality of users and on the other side a common data-link having a shared packet switching device, the method including performing the steps of:
>
> monitoring data-link directed bandwidth from each user;
> maintaining a current sum of the monitored bandwidth; and
> whenever the current sum exceeds a predetermined data-link bandwidth threshold, reducing current collective data-link directed bandwidth by
> for substantially each user, comparing the respective user's data-link directed bandwidth with a predetermined data-link bandwidth threshold for the respective user;
> using an allocation function, selecting at least one user who is exceeding his predetermined data-link bandwidth threshold, and
> for a predetermined time interval, cutting the connection between each selected at least one user and the shared switching device, so as to restore a current sum of the monitored bandwidth to be not greater than the predetermined data-link bandwidth threshold.
>
> Ater: col. 4, lines 10-67 (actually, col. 4, line 10 – col. 5, line 7)
>
> DETAILED DESCRIPTION OF THE INVENTION
>
> The present invention relates to a bandwidth sharing method (illustrated in FIG. 1) for use on respective interstitial connections 12 between on one side a plurality of users 34 and on the other side a common data-link 5 (to a data-communications topology 7 using at least one compatible protocol; e.g. the Internet, LAN, WAN, intra-net, etc.) having a shared packet switching device 6. The instant method 10 includes performing the steps of:
>
> monitoring 11 data-link directed bandwidth from each user (According to one embodiment the monitoring is of all the bandwidth used by each user, even the bandwidth which is directed to another user via the

shared packet switching device; and not intended to use any bandwidth on the common data-link. According to another embodiment the monitoring is only of the data-link directed bandwidth used by each user. Monitoring with a differentiation between destinations requires a much higher degree of data examination and recognition than monitoring of all bandwidth.);

maintaining 12 a current sum of the monitored bandwidth; and

whenever the current sum exceeds a predetermined data-link bandwidth threshold, reducing 13 current collective data-link directed bandwidth by

for substantially each user, comparing 14 the respective user's data-link directed bandwidth with a predetermined data-link bandwidth threshold for the respective user;

using an allocation function, selecting 15 at least one user who is exceeding his predetermined data-link bandwidth threshold, and

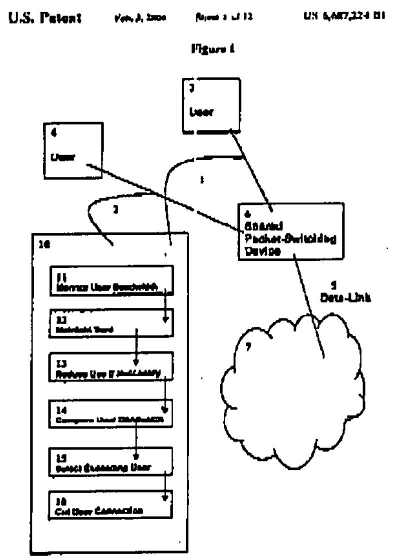
for a predetermined time interval, cutting 16 the connection between each selected at least one user and the shared switching device, so as to restore a current sum of the monitored bandwidth to be not greater than the predetermined data-link bandwidth threshold.

According to the preferred embodiment of the present invention, performing at least one of the steps is done above a predetermined frequency. For example, the step of monitoring is done by sampling each respective user with the common packet switching device every 10 milliseconds, or the step of maintaining is done (updated) every 10 milliseconds, or the step of reducing is done every 5 milliseconds, etc.

According to an embodiment of the present invention, the sub-steps of comparing and selecting are performed substantially with the same frequency as the monitoring step, so that the prerequisites to the sub-step cutting are always available in a updated form. Since all of the steps and sub-steps of the instant method may be performed asynchronously, it is preferred that the legitimacy of performing any cutting be maximized; and that occurrences where the cutting is (after the fact) irrelevant to preventing exceeding common data-link bandwidth allotment are minimized. (Substantially equivalent embodiments of the method of the present invention may be installed directly in an external computer-like device such as 10, or functions accomplished by the steps of the present method may be divided between cooperating front ends of 3 and 4 with back ends of 6 and 7, or a combination of external computer-like device with front ends or with back ends, or the total combination of all.)

However, consider also the following portions of Ater:

Ater: Fig. 1



Ater: col. 7, lines 15-28

Bandwidth Control Machine

Introduction

A step by step description for an algorithm for Bandwidth Control (BC) is presented. In the context of a plurality of users, the general purpose of the BC algorithm is for limiting Bandwidth (BW) usage, or conversely guaranteeing a minimum BW. More specifically, the purpose of the BC algorithm is to be able to guarantee a minimal bandwidth to customers who will purchase such an advantage, and to equally distribute the momentarily unused bandwidth to all users.

Ater: col. 7, lines 60-67

General Approach

The BC machine described here functions to some extent in a similar manner to an elementary Math problem: 24 pipes bring water into a pool at the rate of 10 gallons per second, while one pipe takes water out of the pool at a rate of 100 gallons per second. The pool can contain 140,000 gallons. How long will it take to fill the pool?

Ater: col. 8, lines 16-39

In the case of the BC-type machine, the pool is the switch buffer, the pipes are the ports attached to the users, and the pipe taking the information out is the up-link.

The complete implementation is based on additional requirements:

1. The BC machine is independent of the switch it is associated with.
2. The flow into the switch buffer is not constant. The average flow is determined by sampling the data flow at constant time intervals.

> 3. The flow out of the switch buffer is constant.
> 4. The parameters shall be sufficiently flexible to accommodate up-links from 1.55 MBit/Sec up to 155.52 MBit/Sec.
> 5. A similar machine shall be designed for the information flow from the up-link to the users. However that machine shall be required to limit the flow, since there is no buffer to overflow.
>
> The proposed machine assumes that there is no information from the switch, regarding the buffer, or flow rate of the data. If the switch can provide indication of its buffer filling, then the machine will function the same; and we can drop the integrative function of the variable B defined below.

Ater merely describes an algorithm for Bandwidth Control (BC) that is used in conjunction with a single switch buffer, wherein the switch buffer has multiple ports attached to the users for the flow of data into the switch and an up-link for the flow of data out of the switch. The general purpose of the Bandwidth Control algorithm is for limiting bandwidth (BW) usage, or conversely guaranteeing a minimum bandwidth. The specific purpose of the Bandwidth Control algorithm is to be able to guarantee a minimal bandwidth to customers who will purchase such an advantage, and to equally distribute the momentarily unused bandwidth to all users.

However, contrary to the assertions in the Office Action, only the Bandwidth Control device of Ater monitors the bandwidth of each user; each user does not monitor its own bandwidth. In addition, only the Bandwidth Control device of Ater is informed of each user's bandwidth; none of the users inform a succeeding user in the chain of its bandwidth (indeed, there are no "succeeding" users or a "chain" of users in Ater). Moreover, it is only the Bandwidth Control device of Ater that compares the bandwidths of the various users; each user does not compare the bandwidths of other users. Finally, none of the users in Ater have their "position" reordered; instead, the Bandwidth Control device of Ater reduces the bandwidth of the user or cuts the connection of the user.

c. *Holt does not teach or suggest "a method of optimizing data streaming in a peer-to-peer architecture including a plurality of clients in a chain" and further that "in the peer to peer sharing, the peer monitors the bandwidth of another peer."*

The Office Action admits that Vaid in view of Ater does not teach reordering its position among clients in the chain. However, the Office Action asserts that Holt teaches this element of Applicants' claims.

The cited portions of Holt are set forth below:

<u>Holt: FIGS. 4A – 6B (actually FIGS. 4A-C, 5A-F and 6)</u>

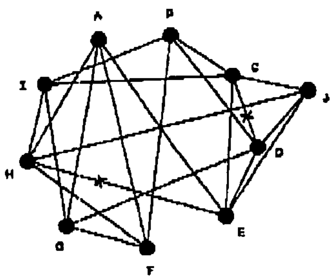


Fig. 4A

U.S. Patent

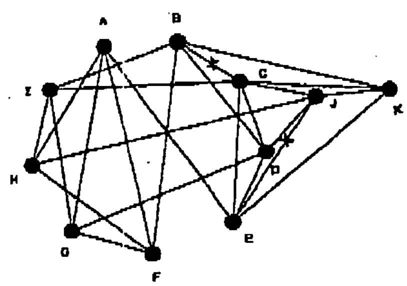


Fig. 4B

U.S. Patent

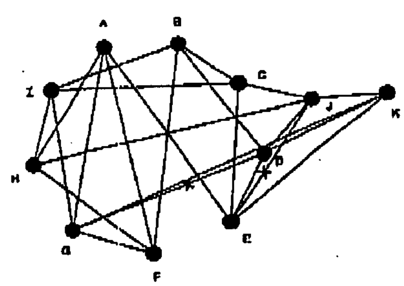


Fig. 4C

U.S. Patent

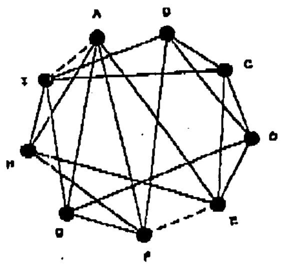


Fig. 5A

U.S. Patent

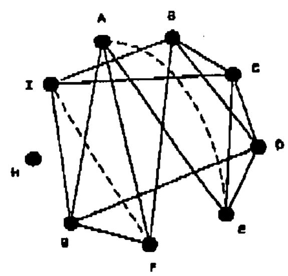


Fig. 5B

U.S. Patent

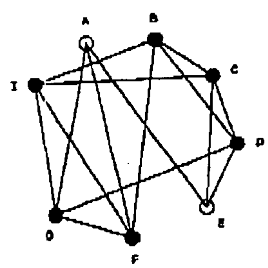


Fig. 5C

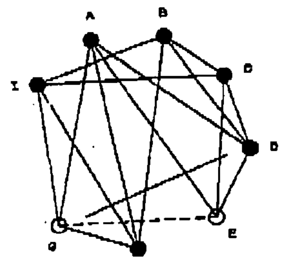


Fig. 5D

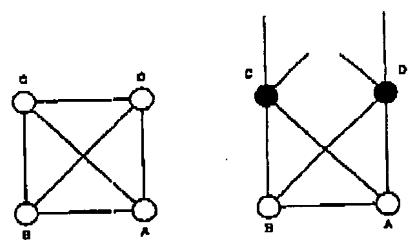


Fig. 5E

Fig. 5F

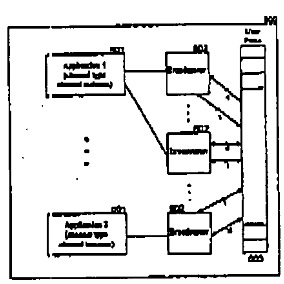


Fig. 6

Holt: Col. 2, lines 40-45 (actually 40-44)

> It would be desirable to have a reliable communications network that is suitable for the simultaneous sharing of information among a large number of the processes that are widely distributed.

Holt merely describes a technique for broadcasting data across a point-to-point network, without the use of a routing table, wherein each participant has at least three neighbor participants and broadcasts data through each of its connections to neighbor participants, which in turn send the data that it receives to its other neighbor participants. The figures of Holt set forth above merely describe how connections are established between participants, and what occurs when connections between participants are terminated.

However, contrary to the assertions in the Office Action, none of the participants in Ater have their "position" reordered, in the context where each client monitors its own bandwidth, each client informs a succeeding client in the chain of that bandwidth, each client compares its own bandwidth with the bandwidth of a preceding client in the chain, and each client, in response to a difference between the compared bandwidths, reorders its position among the clients in the chain.

Indeed, none of the participants of Holt monitor the bandwidth of other participants; moreover, each participant does not monitor its own bandwidth. In addition, none of the participants of Holt is informed of each participants' bandwidth; none of the participants inform a succeeding participant in the chain of its bandwidth.

d. The combination of references does not teach or suggest Applicant's claims.

Consequently, the combination of Vaid, Ater and Holt does not teach or suggest all the limitations of Applicant's independent claims. Indeed, not only does the Office Action fail to set forth a prima facie case of obviousness, the Office Action relies on hindsight to maintain that the references can be combined or modified in the manner suggested. Certainly, there is nothing in the references themselves that suggest the particular combination, or that suggest the references can be modified in such a manner as to render Applicant's claims obvious.

Moreover, Ort fails to overcome the deficiencies of the combination of Vaid, Ater and Holt. Recall that Ort was cited only against dependent claims 14, 23 and 24, and merely for teaching the handling of errors encountered in an MPEG audio/video data stream during playback.

Thus, Applicant's attorney submits that independent claims 1, 16, 25 and 26 are allowable over Vaid, Ater, Holt and Ort. Further, dependent claims 2-15 and 17-24 are submitted to be allowable over Vaid, Ater, Holt and Ort in the same manner, because they are dependent on

independent claims 1, 16, 25 and 26, respectively, and thus contain all the limitations of the independent claims.

G. Claims 14, 23 and 24 are patentable over Vaid, Ater, Holt and Ort

Applicant's invention, as recited in dependent claims 14, 23 and 24, is patentable over the references, because these claims recite limitations not found in the references.

Nonetheless, the Office Action asserts the following:

> Claims 14, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,502,131 issued to Vaid et al. (Vaid) in view of US Patent 6,687,224 issued to Ater et al. (Ater) in further view of US Patent 6,829,634 issued to Holt et al. (Holt) in further view of US Patent 5,784,527 issued to Ort.
>
> Vaid in view of Ater in further view of Holt does not explicitly teach as per claim 14, 23, wherein after the chain has been reordered, a client synchronizes a time code of data in local buffer memory with a time code of data received from a new streamed data input source before switching to data received from that source.
>
> Ort teaches a client synchronizes a time code of data in local buffer memory with a time code of data received from a new streamed data input source before switching to data received from that source (col. 2, lines 35-67).
>
> Therefore it would have been obvious to one ordinary skill in the art at the time of the invention to modify the teachings of Vaid in view of Ater in further view of Holt to synchronize the transfer of data from one terminal to another as taught by Ort in order to handle errors when transferring data (Ort, col. 2, lines 35-38).
>
> One ordinary skill in the art would have been motivated to combine the teachings of Valid, Holt, Ater, and Ort in order to provide a method to handle errors when transferring data (Ort, col. 2, lines 35-38).
>
> As per claim 24, wherein a client comprises switch means responsive to the data synchronizing means to switch to data received from the new streamed data input source when the time codes are synchronized (Ort, col. 2, lines 35-65). Motivation to combine set forth in claim 14.

Applicant's attorney disagrees with the above analysis.

The combination of Vaid, Ater, Holt and Ort does not teach or suggest that, after the chain has been reordered, a client synchronizes a timecode of data in local buffer memory with a timecode of data received from a new streamed data input source before switching to data received from that source, as recited in claim 14, or that synchronizes a timecode of data in local buffer memory with a timecode of data received from a new streamed data input source, as recited in claim 23, or that a client switches to data received from the new streamed data input source when the timecodes are synchronized, as recited in claim 24.

The cited portions of Ort are set forth below:

Ort: col. 2, lines 35-67

> The present invention includes a system and method for handling errors encountered in an audio/video data stream during playback. In one application, the audio/video data stream originates from an MPEG (e.g., Motion Pictures Expert Group) source and is a playback file of the MPEG format. The novel error handling system of the present invention operates during playback of the playback file. Upon receiving an error interrupt originating from a hardware video processor unit, the present invention executes a group of predetermined error handling processes. A playback error can result from bad data within the playback file's data stream, the system data bus, or other related transmission error. One error handling process used by the present invention system causes the playback system to skip B and P frames until an I frame is reached which is processed normally and playback resumes. Another recovery process causes the playback system to seek forward a predetermined number of seconds and/or frames then resumes normal playback in order to avoid a bad media sector. A third process causes the playback system to seek forward to a next sequence header, then resumes normal playback. The above recovery processes are performed in a determined error sequence of the present invention in which repeat errors are handled by different processes according to the error sequence. Back-to-back errors occurring outside a predetermined time or data window are not considered repeat errors and reinitialize the error sequence. If the error sequence fails to avoid the error, the user or viewer is informed that the playback file may be non-MPEG compliant and playback is temporarily terminated.

The cited portions of Ort merely describe how errors are handled when encountered in an audio/video data stream during playback, including skipping or seeking forward in the stream. However, nothing in these cited portions relates to the synchronization of a timecode of data as recited in Applicant's claims 14, 23 and 24.

III. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

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By: ______________________
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G&C 160.30-US-01